METHIONINE TASK FORCE UPDATE

Wednesday, May 21, 2008

National Organic Standards Board

Baltimore, MD

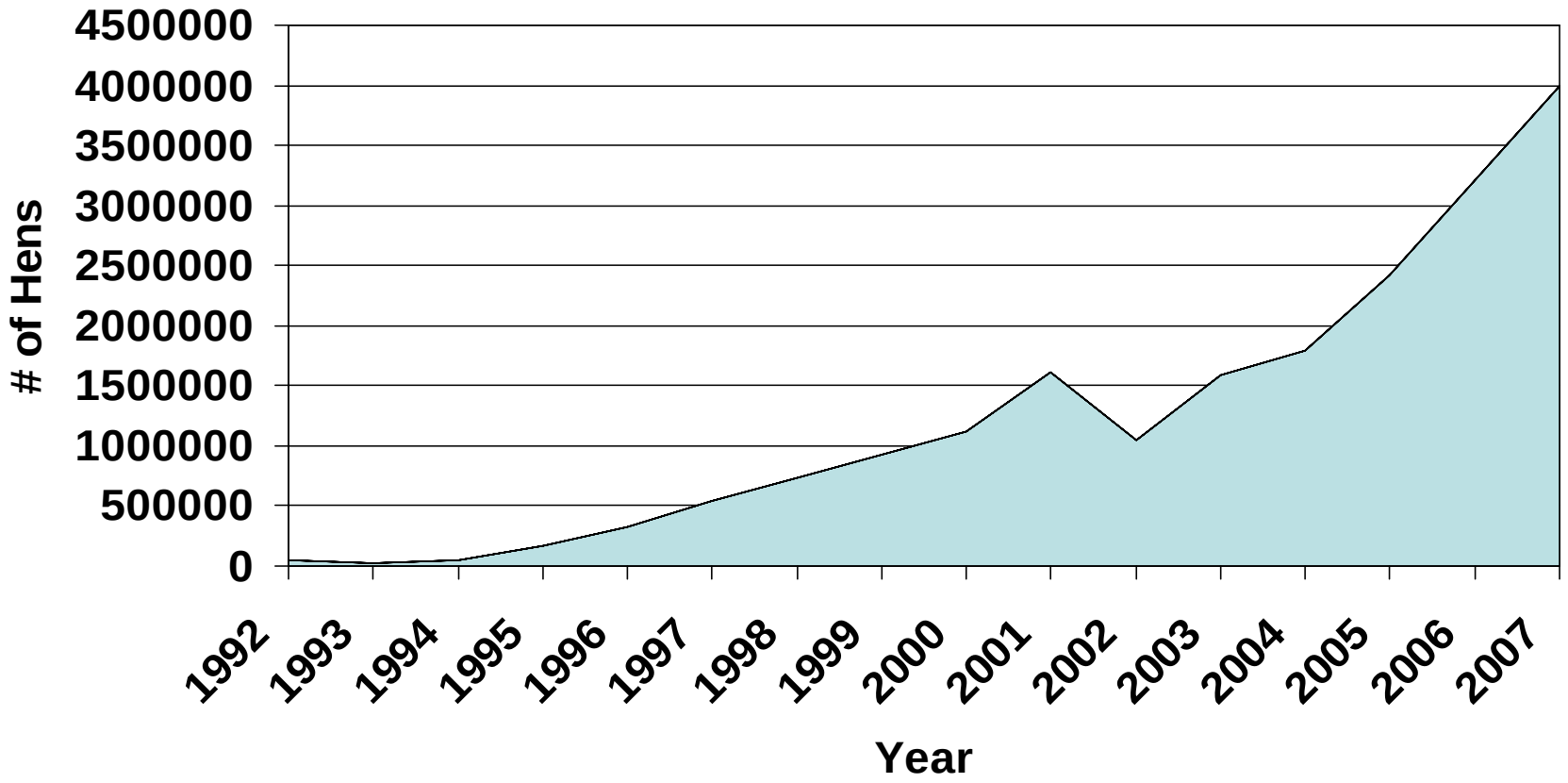
Overview

- Methionine is a necessary nutrient in poultry production
- Prior NOSB boards have approved methionine twice based on the lack of organic alternatives
- The Methionine Taskforce (MTF) has worked on the issue for over six years
- The MTF is funding research & development on several promising alternatives
- The MTF has filed a Petition requesting additional time to implement a viable organic alternative

Who Is the MTF?

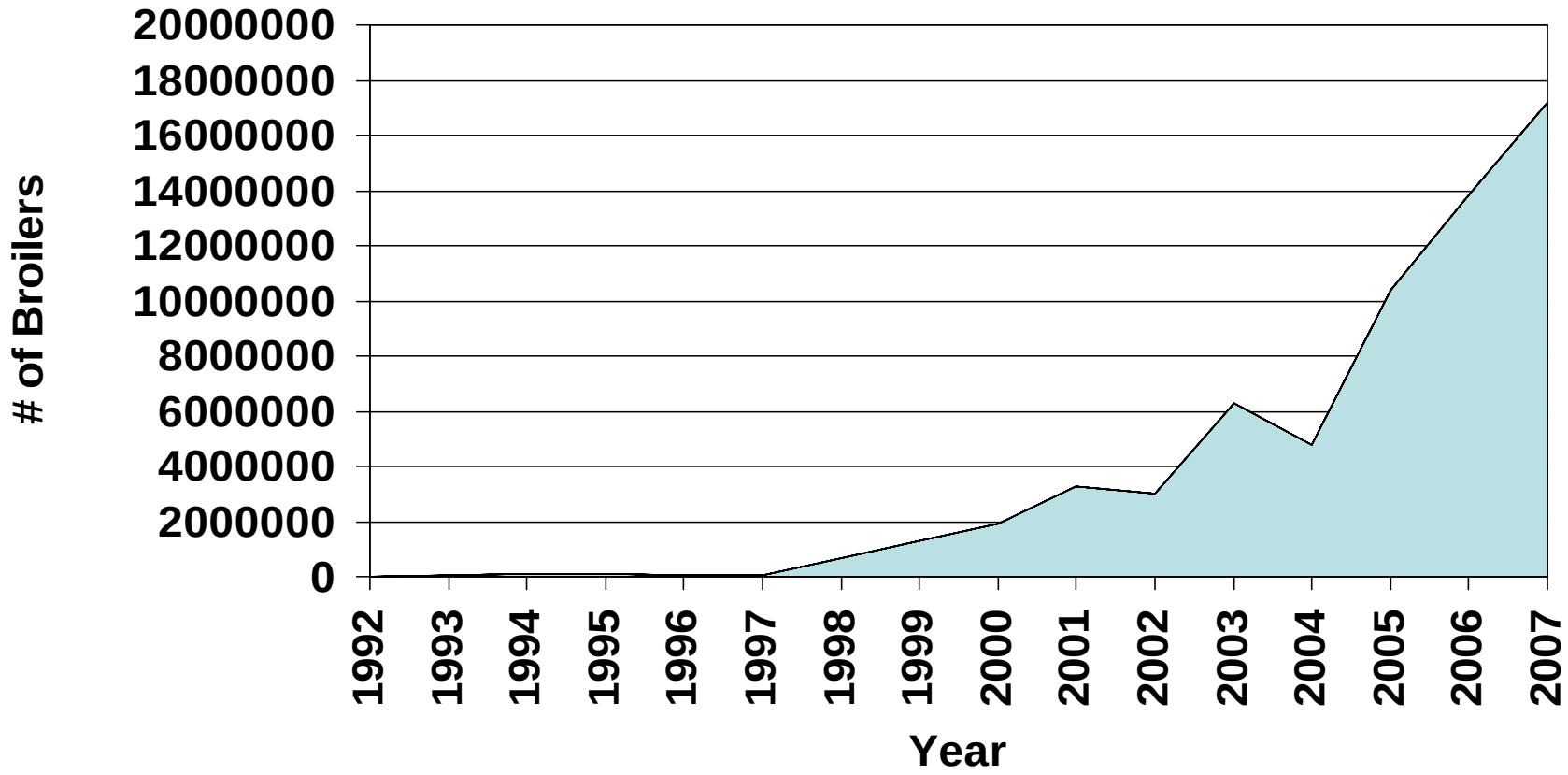
- Organic Poultry Producers
- Partnering with researchers from respected institutions
  - Penn State
  - Univ. of Arkansas
  - Univ. Minnesota
  - Univ. of Wisconsin
  - Cal Poly

Certified Organic Laying Hens in the U.S. 1992-2007



- Source: USDA, ERS, based on information from USDA-accredited State and private organic certifiers
- Hen numbers were estimated in 1995, 1996, 1998, 1999, 2006 and 2007

Certified Organic Broilers in the U.S. 1992-2007



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Organic Eggs and Poultry

- Organic Eggnog
- Organic Ice Cream
- Organic Chicken Soups
- Organic Egg Noodles
- Organic French Toast, Pancakes, and Waffles (Fresh and Frozen)
- Organic Tartar Sauce
- Organic Mayonnaise
- Organic Custards and Puddings
- Organic Salad Dressing
- Organic Cookies, Cakes, Cheese Cakes and Bakery (Fresh and Frozen)
- Organic Hollandaise Sauce
- Organic Chicken Broth
- Organic Breads

Why is Methionine Needed in Organic Production?

Inadequate Methionine Harms Bird Health

- Studies show ("**Ambrosen and Petersen (1997) inadequate protein can cause decreased feather plumage and cannibalism in laying hens.**
- **Substandard protein levels can result in birds with poor plumage condition (missing feathers) and increased methionine resulted in improved plumage**
- **Inadequate amino acid balances results in feather pecking and cannibalism**
- **Therefore, the author suggests worst-case scenario with amino acid imbalance would result in cannibalism and best-case feather pecking with poor feather condition.** "
- Darrin M. Karcher, Ph.D.
  - Michigan Sate University, Poultry Extension Specialist

Inadequate Methione Results in Adverse Environmental Impacts

- Low methionine diets require protein supplementation
- Studies show the need to double protein to meet a hen's need for Methionine if feed is not supplemented.
- High protein diets lead to increased "**nitrogen excretion and ammonia emissions from hen manure or litter.**"
- The diet required to meet the bird's Methionine demand will **"lead to approximately 150% increase in ammonia generation and emission."**
  - Hongwei Xin <*Shin*>, Ph.D. Professor
  - Iowa State University, Agricultural & Biosystems Engineering

Inadequate Methionine is a Health Issue Not a Production Issue

- "**Inadequate supply of amino acids is not simply a production problem.**"
- **Studies have described (Owen, 2000) pecking of each others' feathers in search of this amino acid when it is deficient in the diet.**
- **"This in turn presents a welfare problem."**
- "Nutrition issues in organic poultry systems"
  - The 4th NAHWOA Workshop, Wageningen,
  - Walker, A. and Gordon, S. 24-27 March, 2001 proceedings

Inadequate Methionine Poses an Animal Welfare Issue

- **"The [EU prohibition… on added methionine] is a serious concern on the grounds of animal health and welfare, and the environmental impact as a result of formulated diets with excess protein."**
- Organic Poultry Production in **Ireland**
  - Karen O'Connell and Brendan Lynch 5/31/04

EU Organic Research Suggests Methionine is Needed for Health and Welfare

- … continued from Organic Poultry Production in Ireland…
- "**DL-Methionine has been used in animal diets for over fifty years. It is a safe product and Dr. Owen Keene (Heritage Poultry Management Services, Inc.) recommends that it is necessary in organic poultry feeds in order to maintain the best nutrition and health of all the avian species."**

EU Research Con't

- "**Therefore, from the animal welfare and environmental pollution perspective synthetic methionine should be a legal feed component in organic broiler production.**"
- Effect of DL-Methionine on various performance and slaughter characteristics in slowly growing broilers fed according to organic farming recommendations **(Germany)**
  - A. Lemme, K. Damme, and A. Petri April 2004

EU Research Con't

- "**Without additional organic methionine-rich protein sources, methionine deficiencies will become more pronounced and more widespread in organic poultry production as the level of permitted non-organic proteinaceous ingredients in the diet fall. This will impact on bird health and welfare**."
- An assessment of nutritional Issues in organic poultry production **(UK)**
  - Department for Environment Food and Rural Affairs 2007

Heritage Breeds have the same MET demand as Commercial Breeds

- "Slower growing genotypes have less efficient peformance than conventional but are higher in protein and lower in fat, which may be useful in specialty markets. **They do not appear to have substantially lower Met requirements, which agrees with previous research (Fanatico et al., 2006)."**
  - A.C. Fanatico et al, Performance of alternative meat chickens for organic markets, impact of genotype, methionine level, and methionine source, Abstract #W189

Pasture

- **Insects and Earthworms**
  - Are provided in a Pasture based system, but contain low levels of methionine.
  - Earthworms would not be sufficiently abundant in a pasture setting to meet the bird's methionine demand.
  - "**Methionine requirements of pastured NO-MET birds were not completely met by the forage**"
    - Moritz, et al, Synthetic Methionine and Feed Restriction Effects on Performance and Meat Quality of Organically Reared Chickens, 2005

Pasture

- **Grass**
  - Grass is **“less digestible than most ingredients used in poultry diets”**
  - **“The major benefit of pasturing the birds will be the improvement in environment, not nutrition.”**
    - Manitoba Agriculture, Food and Rural Initiatives, January 2006

Alternatives under Development – High Methionine Corn

- **The MTF has funding 2 seed planting projects through the Michael Fields Institute**:
  - Winter 2007-08—one project in Chile and a second project in Hawaii
- **The MTF has agreed to fund 2 additional projects in the US in 2008 with the MFAI.**
  - Will produce enough net new corn feed stock for ranch trials
  - Will accelerate hybrid development

Alternatives Under Development – Naturally Produced Methionine

- MTF members strongly support this alternative
- Currently evaluating research proposals:
  - University of Arkansas
  - Private party (pending submission)
- MTF intends to fund select studies to provide improved and updated data to the NOSB
- Projects are expected to be completed within 24 months.

Alternatives under Development – Insect Meal

- **Ento-Protein (Insect Meal)**
  - MTF is in discussion with Neptune Industries
  - Pilot Project by end of 2008
  - Full scale production not anticipated until 2009
  - Will be able to conduct Farm Trials in 2009

Addressing the Committee's Concerns

- Petition data does not show immunological stress and reduced feathering
  - **Supported by body of research**
  - **MTF will conduct large scale commercial trials to validate**
- Petition data only supports methionine as needed for performance
  - **Improved performance is consequence of the healthier birds**
- Only consequence of removal of methionine will be a loss in performance
  - **Very likely that organic poultry production will either cease or dramatically shrink**
  - **Adversely impacts entire organic industry**

24 Month Timeline

Action Item	Q2 08	Q3 08	Q4 08	Q1 09	Q2 09	Q3 09	Q4 09	Q1 10
Broiler Trials	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Layer Trials	Start	Start	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Turkey Trials		Get MTF member		Start Trial	Ongoing	Results		
HM Corn	Harvest SA Plant in US	Harvest US	Build US Farmer Support	Plant SA	Harvest SA Plant in US	Plant US (expanded acreage)	Harvest US	
Natural Methionine		Start	Ongoing	Ongoing	Ongoing	Results		
Insect Meal			Monitor Pilot		Feeding Trial			
Update to NOSB	**Spring Mtg**		**Fall Mtg**		**Spring Mtg**		**Fall Mtg**	

24 Month Work Plan to Develop Alternatives

- Work Plan
  - Conduct Multiple Trials on a Commercial Scale
  - Continue Research on High Methionine Corn
  - Sponsor Research on Naturally Produced Methionine
  - Explore Value of Insect Meal
- Provide Regular Updates to NOSB